1.1 About Celletra's TDA System

Celletra Transmit Diversity (TD) technology for CDMA signals enhances the forward link performance by improving the transmit power management, reducing blocking rate, and increasing capacity.

The TD technology is available as an add-on to existing (legacy) base stations. In this case, separate components are added to an existing cell site to enhance the performance that can be achieved by the cell site alone on a per-sector basis. This overview of the technology will provide some insights regarding how the TD solution can be applied to a cell site to enhance capacity performance at the site.

Add-on Transmit Diversity (TDA) provides for redundant replicas of transmitted signals (from the base station) by transmitting the same information over two or more antennas, providing independently faded channels between the BTS transmit and mobile receive antennas. In order to maintain the total transmitted power (or EIRP), each of the two base station transmit antennas in a TDA system has to transmit a minimum of 50% of the power from a conventional one transmit antenna system. Alternatively, higher power may be transmitted in addition to diversity gain by the two antennas (main and diversity). In this case, the cell footprint in the Down-link will increase, or (after down-tilting the antennas) the same coverage with higher capacity is obtained.

The TDA system reduces the per-link-power required for the mobile station (phone). Moreover, reducing the blocking-rate and access-failures improves the cell forward (FWD) link capacity. As a result, in FWD link limited sites, sector erlangs increase.

The TD process is carried out only at the base station; no modifications are required at the mobile handset. This gives TDA a clear advantage over other transmit diversity schemes such as OTD and STS which require new chipsets to be included in the mobile handset.

1.2 TDA System Description

1.2.1 Block Diagram

Figure 1-1 describes the TDA system.

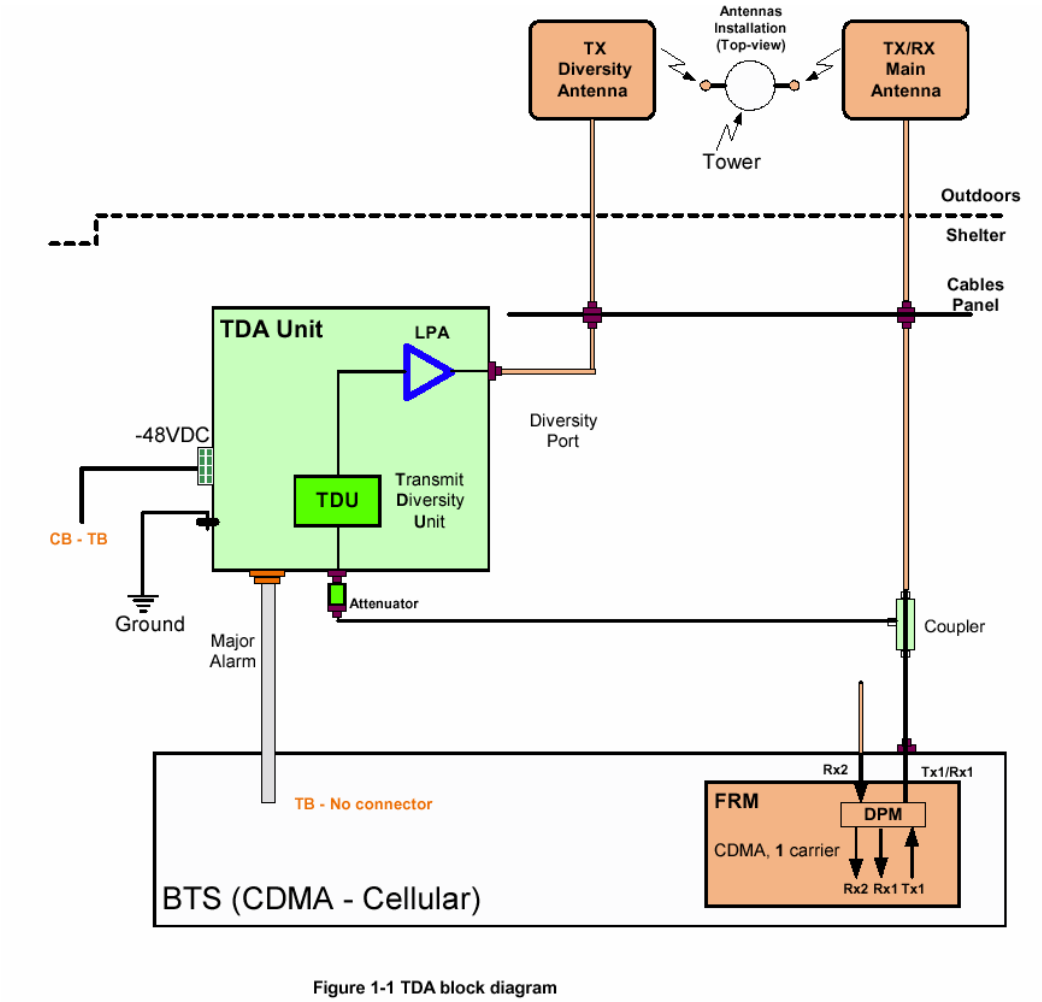

Figure 1-1 TDA block diagram

1.2.2 General Description

The Celletra TDA system consists of the TDA Unit and Coupler:
The TDA Unit interfaces transparently to the BTS at RF low-power levels. The TDA Unit generates the Transmit Diversity (TD) signals and power-amplifies the TD signals to be transmitted through the Tx-Diversity antenna.